

REMARKS

Claim 18 has been cancelled. Claims 1, 21 and 26 have been amended. Claims 1, 5, 7-11, 13, 17 and 19-28 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

1-6. Claims 1, 7 and 8 currently stand rejected for allegedly being obvious in view of U.S. Patent 5,623,162 to Kurihara (hereinafter "Kurihara").

Claim 1

Amended claim 1 recites an electronic component that includes:

“a leadframe;
a platform;
an electronic member located on the platform and connected to the leadframe by electrical conductors; and
a housing which encloses the electronic member and the platform, where first and second support regions each comprising a lobe are provided on the platform on corresponding peripheral portions to support the platform during fabrication of the housing, where the housing has upper and lower support indentations formed therein that expose an upper surface and a lower surface, respectively, of an outer peripheral portion of each lobe to thereby allow each lobe to support the platform during fabrication of the housing, where at least a portion of the first and second support regions project beyond the housing subsequent to the fabrication of the housing.” (emphasis added; cl. 1)

The Official Action contends that “*Kurihara (e.g. Fig. 5-9) discloses (cl. 1) a leadframe (10); a platform (4); an electronic member (4) located on the platform and connected to the leadframe by electrical conductors “wires” not shown; Col. 6, Lines 5-10); and a housing (9) which encloses the electronic member and the platform, where first and second support regions each comprising a projection on the platform on corresponding peripheral portions to support the platform during fabrication of the housing, where at least a portion of the first and second*

support regions project beyond the housing subsequent to the fabrication of the housing (Fig. 7)." (Official Action, par. 4, pg. 2). The Official Action recognizes that "*Kurihara does not appear to show that its projections are rounded and therefore pursuant to its plain and ordinary meaning lobes.*" (Official Action, par. 5, pg. 3). The Official Action concludes that "*however, applicant has not disclosed that his dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. As such, making the tables rounded would have been obvious to one of ordinary skill in the art since it has been held that mere dimensional limitations are, prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical.*" (Official Action, par. 6, pg. 3).

Upon a fair and proper reading, Kurihara fails to either disclose or suggest the features of amended claim 1 emphasized above; that is "*where the housing has upper and lower support indentations formed therein that expose an upper surface and a lower surface, respectively, of an outer peripheral portion of each lobe to thereby allow each lobe to support the platform during fabrication of the housing.*" Kurihara in the cited sections, and in particular FIG. 7, fails to disclose or suggest the use of indentations or holes that expose an outer peripheral portion of the wing lead 3A to thereby allow upper and lower surfaces of each wing lead 3A to support the platform during fabrication of the resin molded body 8. In contrast, in FIG. 7 of Kurihara, which illustrates the step of encapsulating the lead frame with resin (Col. 5, lines 15-16), no indentations or holes are formed in the resin molded body 8 in the vicinity of the wing lead 3A, as the body 8 is situated between the two portions of the encapsulating mold 9. This is also clearly seen in FIG. 8, which illustrates the resin packaged semiconductor device (including the resin molded body 8, the wing lead 3A and two of the outer leads 2A) after the encapsulating

step has been completed. (Col. 5, lines 17-20; col. 6, lines 26-30). The only disclosure or suggestion in Kurihara regarding the use of the wing lead 3A to support the island 4 is that of *“since the outer end of the wing lead 3A is sandwiched and pressed between the pair of encapsulating molds 9, the position of the wing lead is fixed, and therefore, the island holding capability is enhanced, so that reliable resin molding, which is an advantage of having the wing lead, is possible.”* (Col. 6, lines 20-25). Thus, Kurihara teaches that only the fixed position of the wing lead 3A provides enhanced island holding capability to achieve reliable resin molding. The present claimed invention goes beyond the teachings of Kurihara to utilize the exposed upper and lower surfaces of the lobe to allow each lobe to better support the platform during fabrication of the housing. The indentations or holes that expose the lobe surfaces are formed in the housing during the fabrication of the housing using recesses provided in upper and lower mold shells, where the recesses form a matching space for each lobe element in the state in which the mold shells are pressed together. (See FIG. 4 and page 7, lines 9-15 of the present application as filed). As a result, Kurihara neither discloses nor suggests the exposed upper and lower surfaces of the lobes through use of indentations in the housing as in the present claimed invention, the overall result of which is to allow the lobes to better support the housing during fabrication thereof.

In addition, the contention in the Official Action noted above that the housing is identified by the reference numeral 9 in Kurihara is incorrect. Reference numeral 9 instead identifies the encapsulating molds used to form the housing. This is seen in FIG. 7 of Kurihara and from the text in column 6, lines 2-25. It follows that the contention in the Official Action noted above that *“where at least a portion of the first and second support regions project beyond*

the housing subsequent to the fabrication of the housing (Fig. 7)” is also incorrect if reference numeral 9 is taken to mean the housing and not the encapsulating molds.

In light of the foregoing, Kurihara is incapable of rendering amended claim 1 obvious, primarily because Kurihara fails to disclose a number of features of amended claim 1, as discussed above. As a result, it is respectfully submitted that the obviousness rejection of amended claim 1 is moot and should be removed, and that amended claim 1 is in condition for allowance and should be passed to issuance.

7-10. Claim 5 currently stands rejected for allegedly being obvious in view of the combined subject matter disclosed in Kurihara and U.S. Patent 6,197,615 to Song (hereinafter “Song”).

It is respectfully submitted that the rejection of this claim is moot, since claim 5 depends directly from amended claim 1, which is patentable for at least the reasons set forth above.

11-15. Claims 9 and 11 currently stand rejected for allegedly being obvious in view of the combined subject matter disclosed in Kurihara and U.S. Published Application 2001/0010949 to Miyaki (hereinafter “Miyaki”).

It is respectfully submitted that the rejection of these claims is moot, since claims 9 and 11 depend directly from amended claim 1, which is patentable for at least the reasons set forth above.

16-20. Claim 10 currently stands rejected for allegedly being obvious in view of the combined subject matter disclosed in Kurihara and U.S. Patent 5,548,158 to Kawanabe (hereinafter “Kawanabe”).

It is respectfully submitted that the rejection of these claims is moot, since claim 10 depends directly from amended claim 1, which is patentable for at least the reasons set forth above.

21-24. Claims 13, 21 and 26 currently stand rejected for allegedly being obvious in view of the combined subject matter disclosed in Kurihara and U.S. Patent 5,247,202 to Popovic (hereinafter “Popovic”).

Claim 21

Amended claim 21 recites a magnetic sensing device that includes:

“a leadframe;
a platform;
a semiconductor die comprising a magnetic sensing element located on the platform and connected to the leadframe by electrical conductors; and
a package that encloses the semiconductor die and at least a central portion of the platform, where first and second lobes are provided on opposite peripheral ends of the platform to support the platform during fabrication of the package, where the package has upper and lower support indentations formed therein that expose an upper surface and a lower surface, respectively, of an outer peripheral portion of each lobe to thereby allow each lobe to support the platform during fabrication of the package, where at least a portion of the first and second lobes project beyond the package.” (emphasis added; cl. 21)

The Official Action contends that “*Kurihara discloses the elements stated in paragraphs 4-6 of this office action, but fails to explicitly disclose its chip comprises a Hall Effect sensing device. Popovic utilizes semiconductor hall sensing chips (Col. 2, Lines 57-59)*” and concludes that “*it would have been obvious to one of ordinary skill in the art to combine a hall sensor with the chip of Kurihara, in order to provide a magnetic field sensor as taught by Popovic (Col. 1, Lines 10-11).*” (Official Action, pg. 5). The disclosure in paragraphs 4-6 of the Official Action is set forth above with respect to the discussion regarding claim 1.

Claim 21 has been amended to include the features amended into claim 1 above. Therefore, the arguments above with respect to the patentability of amended claim 1 apply equally to amended 21. As a result, it is respectfully submitted that the obviousness rejection of amended claim 21 is moot and should be removed, and that amended claim 21 is in condition for allowance and should be passed to issuance.

Claim 26

Since claim 26 currently stands rejected for the same reasons as claim 21, and because claim 26 has been amended to include the features amended into both claim 21 and claim 1, the arguments above with respect to the patentability of amended claims 1 and 21 apply equally to amended claim 26.

As a result, it is respectfully submitted that the obviousness rejection of amended claim 26 is moot and should be removed, and that amended claim 26 is in condition for allowance and should be passed to issuance.

25-32. Claims 17, 18, 20, 22-25, 27 and 28 currently stand rejected for allegedly being obvious in view of the combined subject matter disclosed in Kurihara, Popovic and Song.

Claim 17

Claim 17 recites a Hall effect sensing device that includes:

- “a leadframe;
- a platform;
- a magnetic sensing element located on the platform and connected to the leadframe by electrical conductors; and
- a housing which encloses the magnetic sensing element and at least a central portion of the platform, where first and second lobes are provided on opposite peripheral ends of the platform to support the platform during fabrication of the housing, where at least a portion of the first and second lobes project

beyond the housing, and a first notch-shaped depression is located between the first lobe and the platform to provide a first moisture barrier, and a second notch-shaped depression is located between the second lobe and the platform to provide a second moisture barrier.” (emphasis added; cl. 17).

The Official Action contends that Kurihara and Popovic disclose every feature of claim 17 except for “notches in lobes.” (Official Action, pg. 6). The Official Action contends that “*Song (Fig. 3) utilizes notches formed in its leads/tabs/Paddle. conductive surfaces.*” (Official Action, pg. 6). The Official Action concludes that “*it would have been obvious to one of ordinary skill in the art to incorporate notches in the modified leadframe package including lobes/tabs of Kurihara in order to enhance bonding strength between the encapsulant and its conductive material as taught by Song (Col. 3-4, Lines 61-10).*” (Official Action, pg. 6).

Upon a fair and proper reading, the combination of Kurihara, Popovic and Song fail to render claim 17 obvious because Song fails to disclose the features of claim 17 emphasized above; that is “*and a first notch-shaped depression is located between the first lobe and the platform to provide a first moisture barrier, and a second notch-shaped depression is located between the second lobe and the platform to provide a second moisture barrier.*” Instead, Song teaches that various components of the lead frame package of Song have dimples formed on component surfaces – for example, the die pad 10 and the semiconductor device 14. The stated purpose of the dimples in Song is to enhance the bonding strength between, for example, the die pad 10 and the semiconductor device 14. (FIG. 3 and col. 3, lines 61-67). In contrast to the combined teachings of Kurihara, Popovic and Song, the present claimed invention recites first and second notch-shaped depressions, each having a particular location between a lobe and the platform, and each depression having a particular purpose; that is, to provide a moisture barrier. There is no suggestion in Song that the dimples be notch-shaped, nor do they have a specific

location on the various components. This is so because the stated purpose of the dimples in Song, as mentioned above, is to enhance the bonding strength between various components of the leadframe of Song. A plurality of simplistic dimples spread about can achieve the enhanced bonding strength between multiple components. Yet, this is an entirely different purpose than the provision of the moisture barrier by the notch-shaped depressions having a particular location as in the present claimed invention. Thus, for the reasons stated above, there no teaching or suggestion in the combined teachings of Kurihara, Popovic and Song, and in particular Song of notch-shaped depressions as recited in claim 17.

In light of the foregoing, the combination of Kurihara, Popovic and Song is incapable of rendering claim 17 obvious, primarily because Song fails to disclose a number of features of claim 17, as discussed above. As a result, it is respectfully submitted that the obviousness rejection of claim 17 is moot and should be removed, and that claim 17 is in condition for allowance and should be passed to issuance.

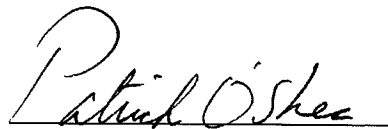
33-36. Claim 19 currently stands rejected for allegedly being obvious in view of Kurihara, Popovic, Song and Kawanabe.

It is respectfully submitted that the rejection of this claim is moot, since claim 19 depends indirectly from claim 17, which is patentable for at least the reasons set forth above.

For all the foregoing reasons, reconsideration and allowance of claims 1, 7-11, 13, 17 and 19-28 are hereby respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,

A handwritten signature in cursive script, reading "Patrick O'Shea", written over a horizontal line.

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